PCT/GB 2004 / 0 0 3 5 0 0

INVESTOR IN PEOPLE

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

REC'D 27 AUG 2004
WIPO PCT

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated 19 August 2004

PRIORITY DOCUMENT
SUBMITTED OR TRANSMITTED IN COMPLIANCE WITH RULE 17.1(a) OR (b)

Patents Form 1/77

Patents Act 1977
(Rule 16)

THE PATENT OFFICE
D
12 SEP 2003
LONDON

The Patent Office

1/77

15SEP03 E837089-1 D00180
P01/7700 0.00-0321452.5

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
South Wales
NP9 1RH

1. Your reference

JL/21967

2. Patent application number
(The Patent Office will fill in this part)

0321452.5

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

Stephen Neal and Ian Bibby both of

501 Carbis Beach Apts
Carrack Gladden
Carbis Bay
St. Ives
Cornwall TR26 2JL

Patents ADP number *(if you know it)* 08692394001

If the applicant is a corporate body, give the country/state of its incorporation 08712689001

4. Title of the invention

Picture Frame with Illumination

5. Name of your agent *(if you have one)*

A A THORNTON & CO

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

235 HIGH HOLBORN
LONDON WC1V 7LE

Patents ADP number *(if you know it)* 0000075001 ✓

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*
GB	0318951.1	13/08/03

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d))

No

Patents Form 1/77

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	
Description	5
Claim *(s)*	3
Abstract	0
Drawing *(s)*	2

10. If you are also filing any of the following, state how many against each item.

Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	1
Request for preliminary examination and search *(Patents Form 9/77)*	1
Request for substantive examination *(Patents Form 10/77)*	
Any other documents *(please specify)*	

11. I/We request the grant of a patent on the basis of this application.

Signature A.A. Thornton & Co Date 12 September 2003

A.A. Thornton & Co.

12. Name and daytime telephone number of person to contact in the United Kingdom — John Lerwill — 020 7405 4044

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

a) *If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.*

b) *Write your answers in capital letters using black ink or you may type them.*

c) *If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.*

d) *If you have answered 'Yes' Patents Form 7/77 will need to be filed.*

e) *Once you have filled in the form you must remember to sign and date it.*

f) *For details of the fee and ways to pay please contact the Patent Office.*

Picture Frame with Illumination

This invention is concerned with frames for the display of pictures and photographs. The invention is also concerned with an illumination panel and resides especially in an illumination panel in or suitable for use in a picture or photo frame.

Personal photographs and pictures are commonly mounted in frames for display and external light, such as daylight or the light emitted by electric lamps, is generally relied upon for illuminating the picture or photograph so that it is easily visible to a person viewing it. There are known back illumination devices which are used, for example, to illuminate drawings and photographic negatives from the rear, but these known devices are large and unsuitable for incorporation in a picture or photo frame.

In accordance with one aspect of the present invention there is provided a frame for display of a picture or photograph comprising a structure for receiving the picture/photograph, and an illumination panel mountable to the frame structure behind the picture/photograph and operable to illuminate the rear of the picture/photograph over substantially the entire area thereof corresponding to the area of the front face of the picture/photograph which is visible from the front of the frame.

In accordance with another aspect the invention provides an illumination panel suitable for use in a picture or photo frame, comprising a sheet of transparent material having front and rear faces, and a source of light disposed along at least one edge portion of the sheet, the front face comprising a surface treatment whereby substantially uniform transmission of light originating from

the source of light is obtained from the front face over at least the area of the front face having said surface treatment.

The surface treatment can be a texturing and this texturing is conveniently applied as a screen printed dot matrix or other variable density pattern. A transparent, and more preferably translucent layer is applied against the front face with there being defined an air gap therebetween due to the textured surface. An opaque backing sheet is preferably positioned against the rear face of the transparent sheet to avoid unnecessary loss of light. Nonetheless, if desired the front and rear faces could be textured and have translucent layers applied against them, such as for illuminating two pictures or photographs placed against the front and rear sides of the panel respectively.

The source of light may be a plurality of discrete light sources, preferably opto electronic devices, in particular light emitting diodes, that are conveniently mounted on a circuit board disposed along an edge of the transparent sheet. The light sources can be located within a casing, conveniently formed by a channel member, so that light emitted from the sources is directed into the transparent sheet at the edge where the light sources are located.

The illumination panel according to the invention can have a total thickness of only a few millimetres, e.g. 2 to 7 mm, making it suitable for mounting directly behind a picture or photograph within an otherwise conventional picture or photo frame, and thereby a completely new visual effect is achieved by a uniform level of back illumination of the picture/photograph over the whole visible area of the picture/photograph.

An embodiment of the invention is described in more detail below with reference to the accompanying drawings, in which

Figure 1 is an exploded perspective view illustrating a picture/photo frame embodying the invention; and

Figure 2 is an exploded perspective view of an illumination panel in accordance with the invention and intended to be incorporated in the frame of Figure 1.

The picture/photo frame shown in Figure 1 includes a frame structure 1 defining a viewing opening or window 2 and provided with a glass or transparent plastic front as is well known. The picture or photographic print (not shown) to be displayed is positioned within the frame directly behind the glass front. An illumination panel 3 is positioned within the frame structure directly behind the picture/photograph. A backing panel 4 is in turn located behind the illumination panel 3 and is secured in the frame structure 1 by clips or any other known manner. As is conventional the backing panel 4 may carry a fold-out stand or support 5.

The illumination panel 3 is shown in detail in Figure 2 and comprises a sandwich construction with a clear plastic sheet 10 having a front face 11 to which an opal film front layer 12 is attached, and a rear face against which an opaque backing sheet 13 is fixed. Along one edge the plastic sheet has a series of recesses 20 for receiving respective light emitting diodes 14 mounted on a common printed circuit board 15 which is housed within an extruded channel member 16. In the assembled illumination panel 3 the sides of the channel member 16 cover the diodes 14 whereby the light emitted by the diodes is constrained to enter the material of the clear plastic sheet and to become distributed therein by internal reflection. The front face 11 of the clear plastic sheet 10 has a surface texturing 17 over the main part of its area, and in particular over the area corresponding to the area of the picture/photographic

print to be back illuminated. The texturing is suitably achieved by screen printing a dot matrix pattern or the like on the front face of the sheet 10 and it serves to define a very small air gap between the plastic sheet 10 and the opal film 12 as well as creating light reflections at the sheet surface, these effects ensuring an even light distribution over the textured area and avoiding a pixelated light distribution effect which tends to occur without an air gap present. The function of the opaque backing sheet is to avoid unnecessary light loss through the reverse side of the light transmission sheet 10. With the illumination panel constructed as described it has been found possible to achieve a substantially uniform level of light transmission over the main area of the front face 11, with illuminating diodes positioned along one edge only, and in particular there is no discernable variation in light intensity across the surface in the direction away from the diodes. Nonetheless, illuminating diodes could be located at more than one edge of the light transmission sheet 10 and this may be desirable if very large pictures or photographs are to be displayed.

Constant electric power supply for energising the light emitting diodes can be supplied from an electronic power supply or battery (not shown) which in either case may be mounted at the rear of the backing panel 4 and be connected to the printed circuit board 15 by wires 18, 19 and possibly an on-off switch which can also be located on the rear of the backing panel.

From the foregoing description it will be understood that the invention provides a picture frame with a panel for back illumination of the image displayed. This result is achieved by an illumination panel of slim construction, e.g. having a thickness of 2 to 7 mm, and preferably about 3.5 mm, capable of fitting within most standard picture frames. The illumination panel operates at very low voltage levels and with very little heat generation so that it is safe in use. The

invention thereby provides a new visual display effect for pictures and photographs and can also be used for background lighting effects or even low level nightlights.

Modifications are of course possible without departing from the scope of the invention. For example, whilst a rectangular frame has been specifically described the invention is applicable also to frames of other shape, such as oval, circular or hexagonal. Furthermore, the invention can be applied also to three dimensional frames such as cubic photo display frames.

Claims:

1. A frame for display of a picture or photograph comprising a structure for receiving the picture/photograph, and an illumination panel mountable to the frame structure behind the picture/photograph and operable to illuminate the rear of the picture/photograph over substantially the entire area thereof corresponding to the area of the front face of the picture or photograph which is visible from the front of the frame.

2. A frame according to claim 1, wherein the frame structure defines a window opening covered by a sheet of transparent material, and a backing panel attachable to the frame with the picture/photograph and the illumination panel held between the sheet of transparent material and the backing panel.

3. An illumination panel, e.g. for use in a frame as defined in claim 1 or 2, comprising a sheet of transparent material having front and rear faces, and a source of light, disposed along at least one edge portion of the sheet, the front face having a surface treatment whereby substantially uniform transmission of light emanating from the source of light is obtained through the front face over at least the area of the front face having said surface treatment.

4. An illumination panel according to claim 3, wherein the surface treatment is a texturing for creating light reflections at the surface and defining an air gap between the surface and a flat layer of material applied against the surface.

5. An illumination panel according to claim 4 wherein the texturing is printed onto the front face of sheet material.

6. An illumination panel according to claim 3, 4 or 5 wherein a film of translucent material is applied over the front face of the transparent sheet.

7. An illumination panel according to any one of claims 3 to 6, wherein an opaque backing sheet covers the rear face of the transparent sheet.

8. An illumination panel according to any one of claims 3 to 7 wherein the source of light comprises a plurality of discrete light sources.

9. An illumination panel according to claim 8, wherein the light sources are located in recesses at the edge of the transparent sheet.

10. An illumination panel according to claim 8 or 9, wherein the light sources are opto electronic devices.

11. An illumination panel according to claim 9 or 10, wherein the light sources are diodes.

12. An illumination panel according to any one of claims 8 to 11, wherein a circuit board is mounted at an edge of the transparent sheet and carries the light sources positioned along the edge of the transparent sheet.

13. An illumination panel according to claim 12, wherein the circuit board and the light sources are accommodated in a channel-shaped housing.

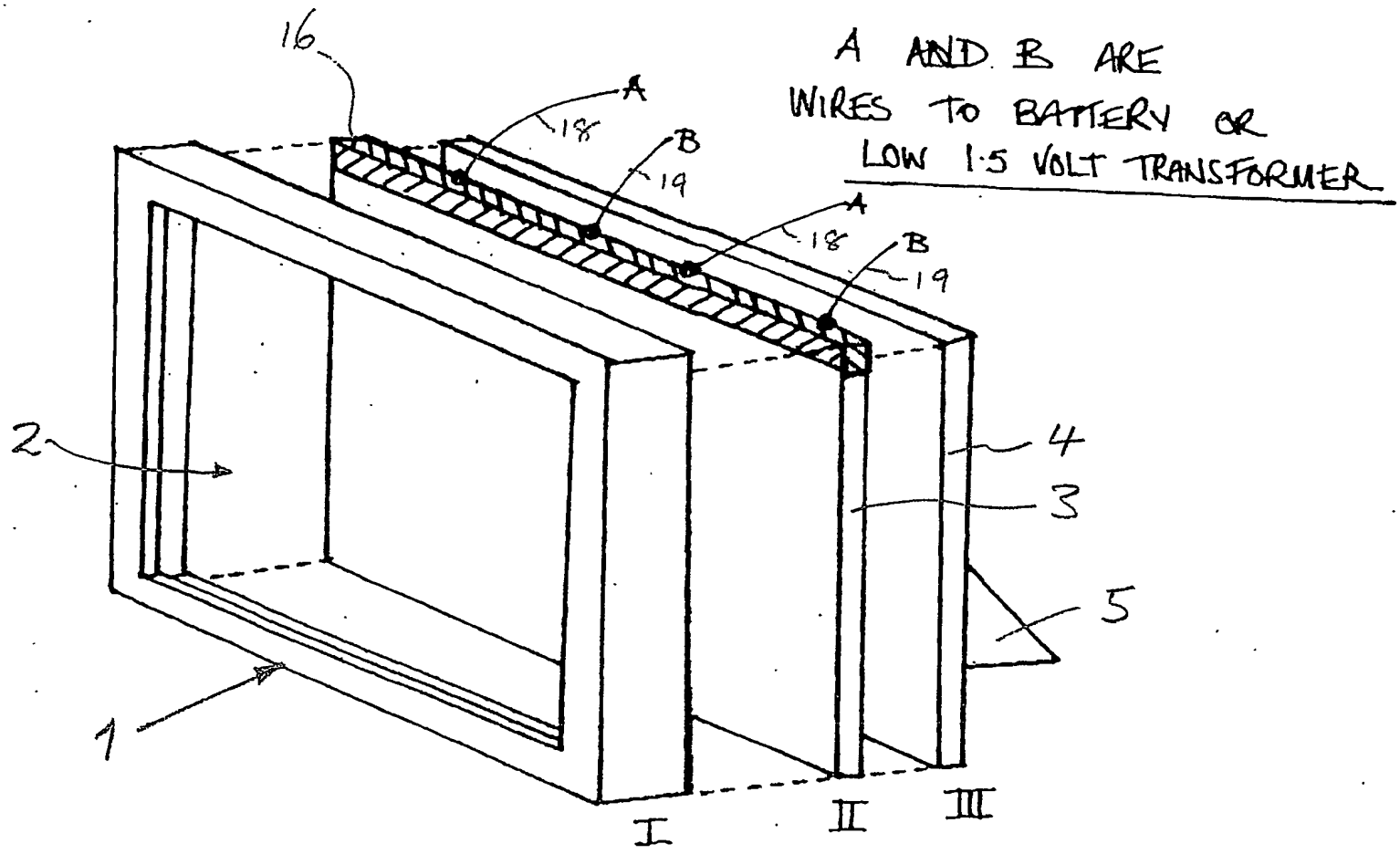
14. An illumination panel according to any one of claim 3 to 13, wherein the panel thickness is from 2 to 7 mm.

15. An illumination panel substantially as herein described with reference to Figure 2 of the drawings.

16. A frame according to claim 1 or 2 wherein the illumination panel is as claimed in any one of claims 3 to 15.

17. A picture or photo frame substantially as herein described with reference to the accompanying drawings.

DRAWING FIGURE 1



A AND B ARE WIRES TO BATTERY OR LOW 1.5 VOLT TRANSFORMER

I STANDARD SIZE PHOTO FRAME WITH GLASS

II LIGHT EMITTING 5mm BACKING

III STANDARD PHOTO FRAME BACKING WITH FOLDING STAND

IMAGE IS PLACED BETWEEN I AND II

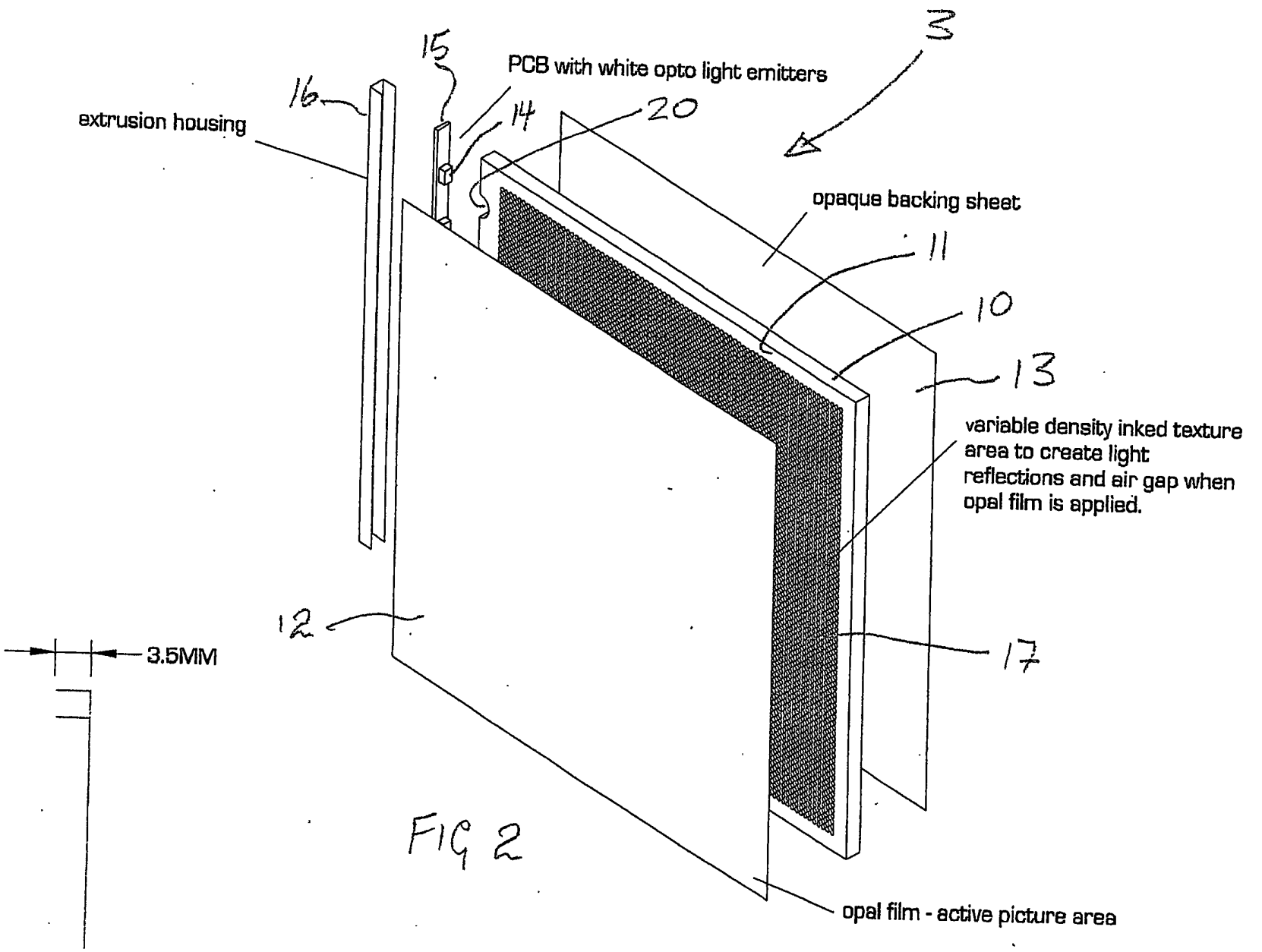


FIG 2

exploded diagram